



UNITED STATES GENERAL ACCOUNTING OFFICE
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COMMUNITY AND ECONOMIC
DEVELOPMENT DIVISION

FEBRUARY 4, 1980

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Chairman, Subcommittee on Resource Protection
Senate Committee on Environment and Public Works
Chairman, Subcommittee on Natural Resources
and Environment
House Committee on Science and Technology

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Subject: Is Adequate Support Provided for
Environmental Protection Agency
In-House Research? (CED-80-50)

In your January 29, 1979, letter you requested that we provide certain information on the availability and adequacy of support provided by the Environmental Protection Agency (EPA) for in-house research conducted by its Office of Research and Development (ORD). The particular areas of interest identified in your request and through subsequent discussions with your offices are

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- 1 --whether EPA's procurement policies, procedures, and practices are flexible enough to allow timely acquisition of supplies, parts, scientific equipment, and services;
- 2 --whether shops are available and properly staffed for repairing and calibrating instruments and for fabricating, when needed, unique experimental apparatus not readily available off the shelf; if not, whether these services are available elsewhere;
- 3 --whether adequate facilities are available for storage of supplies, parts, and equipment used in support of in-house research; and
- 4 --whether in-house researchers are provided adequate laboratory technician support to complete research tasks without significant delays.



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This letter summarizes information obtained primarily through detailed reviews at the four largest in-house research laboratories at Research Triangle Park, North Carolina, and Cincinnati, Ohio, and through limited evaluations at four other laboratories at these locations. In performing our work we (1) held extensive interviews with ORD headquarters and laboratory officials and with representatives from the Office of Administration, (2) toured laboratory and support facilities, (3) reviewed and evaluated available budget and planning documents; procurement policies, procedures, and regulations; and technical and financial progress reports, (4) obtained and reviewed a recent EPA Science Advisory Board study ^{1/} of health effects research laboratories, and (5) analyzed questionnaire responses from directors at all 15 ORD laboratories obtained as part of another GAO assignment.

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Overall, we found the laboratories to be adequately supported in terms of supplies, parts, equipment, shop and laboratory technician services, and storage facilities. We also found that in most cases EPA's procurement policies, procedures, and practices are flexible enough to allow purchases of support items and services in a timely manner. Consequently, substantial numbers of research tasks do not appear to be significantly delayed because of support problems. There are, however, exceptions to these overall observations, and they are included in our response to each issue examined.

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FLEXIBILITY OF EPA'S PROCUREMENT
PROCESS IN PROVIDING LABORATORY
SUPPORT ITEMS AND SERVICES

We believe that EPA's procurement process generally contains adequate flexibility for timely acquisition of routine and unique supplies, parts, scientific equipment, and services to support in-house research. Most officials we interviewed believe the procurement process to be sufficiently responsive to researchers' needs. They

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^{1/}"Report of the Health Effects Research Review Group," February 1979.

told us that they had not encountered significant delays in procuring support items and that these items are generally available in sufficient quantities when needed. Further, some officials believe that the procurement process has become more efficient in recent years.

Our examination of progress reports at four major laboratories disclosed that only 4 percent of all in-house research tasks in fiscal year 1979 were delayed because of difficulties in procuring supplies, parts, equipment, or support services and that most of these delays were confined to microwave research at Research Triangle Park. Further examination revealed that these delays were not caused by problems with EPA's procurement process but by a vendor's inability to supply unique microwave equipment and components within established time frames. Laboratory officials told us that they anticipated some delays in obtaining unique support items but that delays have been minimized by substituting similar equipment items. For example, although a vendor delivered one component more than 4 months late, research continued during this period using a similar measuring device.

Laboratories have available and use large quantities of chemicals, disposable plastics, and some glassware for support of in-house research. They also have available such sophisticated scientific equipment as gas chromatograph mass spectrometers, ultraviolet analyzers, and scintillation detectors. Most supply and equipment purchases, which comprise less than 10 percent of the total annual expenditures for a typical large laboratory, are made through the small purchase process in accordance with Federal procurement regulations. Purchases are limited to \$10,000 except for unlimited purchases from the General Services Administration's Federal Supply Schedule. Approximately 75 percent of all support items purchased by laboratories at Research Triangle Park during fiscal year 1979 were small purchases.

At both Research Triangle Park and Cincinnati, requisitions for support items are normally prepared by researchers, approved by laboratory managers, and processed and placed with vendors by Office of Administration officials. Orders for \$5,000 or less may be placed orally,

while all others must be in writing. Officials at Research Triangle Park told us that approximately 65 percent of all small purchase orders are placed orally and require an average of 9 days for orders over \$500 and an average of 5 days for orders under \$500. Written orders may require up to 17 days, depending on the dollar amount. According to officials, procurement has become more efficient during the last 3 years, with the average processing time for all small purchases at Research Triangle Park being reduced from 21 to 9 days.

Although EPA's procurement process must incorporate the sometimes restrictive and rigid requirements of Federal procurement regulations, researchers have at their disposal a variety of methods to expedite the process. For example, time required to review and process requisitions can be substantially reduced by having the researcher walk the requisition through the various steps. Procurement officials at Research Triangle Park told us that about 95 percent of the time these orders are placed with vendors within 1 day. More significantly, standing purchase agreements and petty cash funds allow researchers to go directly to vendors, such as local electronic suppliers, for parts, services, and supplies not readily available from the Federal Supply Schedule. Standing purchase agreements are considered to be a very flexible means of obtaining support items and services by officials at Research Triangle Park and Cincinnati. Approximately \$774,000 worth of support items and services were purchased through this method at Research Triangle Park in fiscal year 1979. Procurement of scientific equipment may also be expedited by acquiring existing equipment through an EPA-wide excessing system (transfer of laboratories' excess equipment items to other laboratories) or by sharing equipment with other laboratories. Finally, some experimental instruments are quickly fabricated by in-house shops or through contracts with nearby commercial shops.



Most laboratory and administrative officials we interviewed said that they had not encountered problems in procuring supplies, parts, and equipment and that these items are readily available to support in-house research. We observed what appeared to be rather substantial quantities of consumable supplies in laboratories and in

various storage areas. A division director of one large laboratory told us that he emphasized availability of support items rather than accountability.

Laboratory officials were also generally pleased with the quantity and quality of scientific equipment. Officials at Cincinnati told us they procured top-of-the-line equipment for support of in-house research. Officials in one division of a Research Triangle Park laboratory, however, told us that they were unable to conduct certain essential tasks due to lack of selected equipment and therefore spent unnecessary time performing manual analysis of data. They attributed this problem to inadequate space to locate and operate the equipment rather than to difficulties in procurement. A Research Triangle Park administrative official told us that current plans for additional space should solve the problem.

Officials at Research Triangle Park and Cincinnati also told us that maintenance, repair, and calibration services for major equipment have been readily available to date through warranty and service contracts. This situation may change, however, as a result of a recent interpretation of the 1965 Service Contract Act. In June 1979 the Department of Labor ruled that major equipment vendors that contract with Government agencies to service equipment must comply with the act's provision for using established wage rates and must make their records available to Government auditors to examine compliance with this and other requirements. Several companies, including Hewlett Packard and Digital Equipment Corporation, have notified EPA that they will not enter into contracts containing this provision and therefore will discontinue servicing major equipment items.

A procurement official at EPA headquarters told us that, potentially, this is the most serious support problem facing the agency. EPA relies heavily on service contracts and any disruption would cause tremendous problems. EPA's options include (1) performing service and maintenance with in-house personnel, (2) contracting with companies that will abide by the act and hope that they have the required expertise and parts to maintain other manufacturers' equipment, or (3) convincing the Department

of Labor that the act should not apply to industries whose major function is to manufacture and sell equipment rather than provide service.

According to an EPA official, the first two options are probably impractical and too costly. The Chairman, House Committee on Government Operations, has requested the Department of Labor to provide the committee with feasibility, cost/benefit, and impact studies to support its decision to apply the act to automatic data processing and telecommunications contracts. The chairman also requested that the Department of Labor suspend its June 1979 ruling until the committee can assure itself that there will be no adverse impact on Government operations from application of the act.

The Department of Labor subsequently granted a 90-day exemption to allow time to review the issues before any final decision on the application. Unfortunately, according to the chairman, the committee found that neither the Department of Labor nor the industry were able to provide sufficient data or analyses to assist in the review. On November 8, 1979, the Secretary of Labor notified the chairman that the exemption would not be extended and that, thereafter, automatic data processing and telecommunications maintenance contracts would be considered subject to the Service Contract Act.

Because of the importance of this issue, the Chairman, House Government Operations Committee, on November 23, 1979, requested that GAO immediately initiate an intensive review of the Department's decision. Our Human Resources Division is currently conducting this review.

ADEQUACY OF AVAILABLE SHOP
FACILITIES AND SERVICES

Laboratories we reviewed appear well supported with shop facilities and services for repairing and calibrating sophisticated scientific equipment and for fabricating, when needed, unique experimental apparatus not readily available off the shelf. We found that in-house shop capabilities are supplemented by ready access to such services as milling, grinding, and glassblowing from nearby commercial vendors. (2)

Our review of progress reports at four major laboratories disclosed no in-house research task delays during the last fiscal year because of problems with shop support.

Laboratories at Research Triangle Park and Cincinnati have a wide variety of shop services from in-house facilities staffed with EPA and onsite contract personnel and from nearby vendors. The two major in-house laboratories at Cincinnati employ 24 technicians and craftsmen skilled, and in some cases cross-trained, in such areas as welding, electronics, woodworking, and machinery. They support in-house research at the laboratories' two central locations. Additionally, the research center, through the Office of Administration, employs an electronics technician and a machinist for fabrication and repair work required by any scientist at the center. Other shop services, such as metal work and glassblowing, are provided by an onsite contractor and a nearby commercial vendor, respectively.

Unlike Cincinnati, the Research Triangle Park center has a number of widely scattered machine, woodworking, and electronic repair and calibration shops. The center and its outlying activities employ 36 shop technicians trained in electronic, mechanical, engineering, and other skills. A large onsite contractor employs 12 mechanics, machinists, and other technicians who perform high-precision electronic and fabrication work. Finally, a nearby commercial vendor is staffed with a variety of skilled technicians capable of performing high-precision milling, grinding, and welding services under contract.

Almost every official at Research Triangle Park and Cincinnati who commented on shops told us that in-house and contract shop support ranged from good to excellent. Officials at both centers were generally pleased with the extent to which shops are equipped and staffed and told us that shops are almost always able to produce quality work within a reasonable time.

One official at Research Triangle Park said that, in his opinion, having shops located in the same areas as the center's highly decentralized research activities contributes to their ability to respond quickly to support needs. Finally, officials at Research Triangle Park demonstrated two experimental apparatuses--a dynamometer

cassette filtering device and an 8-arm radial rat maze--that were fabricated by in-house shops because they are not available from commercial sources.

AVAILABILITY AND ADEQUACY
OF STORAGE FACILITIES

Although storage facilities are not always conveniently located, we believe that the laboratories reviewed generally have adequate facilities for storing supplies, parts, and equipment used to support in-house research. Our review of progress reports at four of the larger laboratories revealed no in-house task delays during fiscal year 1979 because of storage problems. Further, officials at these and other laboratories did not identify any in-house task delays because of problems in storing supplies, equipment, and other support items. (3)

We found distinct differences in storage facilities at Research Triangle Park and Cincinnati. The Cincinnati center, specifically designed and constructed for research, centrally stores all routine laboratory supplies in one building and less frequently used equipment and other items in two other buildings. The Research Triangle Park center, on the other hand, was not designed and constructed for research. Consequently, it has more decentralized storage of routine and less frequently used support items in 6 buildings and 10 mobile trailers. (3)

Most officials at Cincinnati assessed storage facilities as adequate or not a problem. Several officials at Research Triangle Park, however, expressed uncertainty as to what their storage requirements really are and concern over whether available storage facilities are adequate. The determination of storage requirements appears to be complicated by such factors as (1) delays in identifying excess scientific equipment in storage, (2) limited knowledge of the quantity of stored routine supplies and equipment, (3) the highly scattered nature of existing storage, and (4) current and planned changes in overall space.

Although recent improvements have been made in storage, at Research Triangle Park, at least one problem still exists. Because of storage space limitations, some animal-handling equipment and supplies have to be stored outdoors. As a (3)

result, some items are damaged by extreme weather, and food supplies are often contaminated by pests. A recently approved interim plan to upgrade the entire animal care facility will provide additional storage space and, according to officials, will solve this problem.

Although other researchers expressed dissatisfaction with storage conditions, our examination revealed that some of the problems could be attributed to poor house-keeping. For example, while there were several boxes of supplies stored on a laboratory floor, we observed unused overhead storage cabinets that could have accommodated the supplies. The researcher in charge agreed that better utilization of existing space would improve storage conditions.

One administrative official at Research Triangle Park summarized the situation by saying that storage conditions are as good as possible given overall space limitations. In contrast to the general satisfaction with storage facilities, however, officials at both locations frequently expressed concern over the lack of safe and adequate space to conduct in-house research.

ADEQUACY OF LABORATORY
TECHNICIAN SERVICES

Technician support services appear adequate for scientists to complete in-house research tasks without significant delays. Our examination of progress reports at four major laboratories disclosed no in-house task delays during the last fiscal year due to problems with technician support services. Additionally, most officials we interviewed told us that in-house tasks are not being delayed because of technician support problems. Although some officials expressed concern that not enough technicians were available, greater concern was expressed over the need for more professional scientists to perform in-house research and to monitor the substantially increased amount of extramural research. According to officials and laboratory progress reports, some in-house tasks are delayed because of a shortage of professional scientists.

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Scientists at Research Triangle Park and Cincinnati are aided by in-house technicians who perform a wide variety of duties, including preparing and maintaining tissue cultures, performing diagnostic tests, and operating scientific equipment under a professional scientist's supervision. Substantial increases in research funds and tasks in recent years, coupled with stringent personnel ceilings, have forced the laboratories to obtain additional technical support through contracts with commercial firms and through cooperative agreements with local universities. For example, test animals, which represent the single largest support item for some laboratories at Research Triangle Park and Cincinnati, are supplied and cared for by contract personnel. At one laboratory, the role of contract technicians is being expanded to allow these individuals to perform additional technical tasks, such as sampling and weighing animals, which are now being done by in-house technicians. Students, working under cooperative agreements, provide technical support to researchers at most laboratories and account for approximately 50 percent of the technical support at some laboratories we visited.

While some officials at Research Triangle Park and Cincinnati expressed concern as to whether adequate numbers of full-time, in-house technicians are assigned to their laboratories, their greatest concern was for more professional scientists such as toxicologists and chemical engineers. Most laboratory officials we talked with at Research Triangle Park told us that technical support services met or exceeded their requirements and were unable to cite examples of technical support problems which had hindered in-house research. Also, management officials there told us that they have not had trouble acquiring needed laboratory technician services. Several officials at Cincinnati told us that they would prefer more full-time, in-house technicians in lieu of part-time students. According to these officials, while the students do excellent work, scientists' valuable time is required to train each new group.

OTHER MATTERS

In addition to responding to the above issues, you requested that we compare the level and adequacy of support provided for EPA in-house research with that provided at other high-quality Government, private, and academic laboratories. Since we did not identify significant problems with support to EPA in-house research, however, we did not complete this segment of the request. This was discussed with and agreed to in meetings with your offices.

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While we did not obtain written agency comments on this report, we did discuss its contents with EPA officials who generally concurred with our findings. As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 7 days from the date of the report. At that time we will send copies to the Administrator, Environmental Protection Agency, and other interested parties.



Henry Eschwege
Director